

3. **SPECIAL PROJECTS AND REPORTS**

A. **Deepwater Program (CG)**

On June 25, 2002, the Coast Guard (CG), U.S. Department of Transportation, announced the award of a landmark contract valued at \$11.04 billion for a fleet of new ships and aircraft, plus improved command and control systems, to meet the service's homeland security and other mission needs. In addition, the contract includes \$5.91 billion for operating, maintenance, and sustainment costs for a total value of \$16.95 billion. The contract was awarded to Integrated Coast Guard Systems (ICGS), a joint venture established by Lockheed Martin and Northrop Grumman. Known as the Deepwater Program, the ICGS is the largest ever for the U.S. Coast Guard. It calls for the delivery of the first ships and planes – and upgrades to some existing vessels – within the next 5 years. This is the first time that the Coast Guard has bundled procurement of several types of ships, aircraft, and other equipment into an integrated procurement program.

The contract may extend for up to 30 years. Deepwater will involve the acquisition of up to 91 ships, 35 fixed-wing aircraft, 34 helicopters, and 76 unmanned surveillance aircraft, and the upgrade of 49 existing cutters and 93 helicopters, in addition to systems for communications, surveillance, and command and control. The vessels and aircraft included in the ICGS procurement program make up the Coast Guard's primary multi-mission coastal and offshore fleet, i.e., larger Coast Guard cutters and aircraft which serve as the backbone of many missions including drug and illegal migrant interdiction, fisheries enforcement, pollution patrols, and homeland security patrols, boardings, and inspections. Command, control, and communications systems will be designed not only to integrate operations of the new ships and planes, but also improve coordination of all Coast Guard operations, as well as with other federal agencies and the Department of Defense. The new ships and planes are coming at an opportune time for the Coast Guard. In addition to increased homeland security responsibilities, which involve pushing U.S. borders back to protect U.S. ports, waterways, and coastlines, the Coast Guard still has many missions vital to the nation's physical, economic, and environmental security.

The Coast Guard's Deepwater Program that led to the ICGS contract has been in development for 5 years. The ICGS contract does not include smaller rescue and patrol boats, buoy tenders and workboats, icebreakers, or shoreside facilities.

For further information, contact Capt. Jeffrey Karonis, Chief, Office of Public Affairs (G-IPA), U.S. Coast Guard, 2100 Second Street, SW, Washington, DC 20593, (telephone: (202) 267-

(GHG) emissions are in the form of carbon dioxide (CO₂) emissions resulting from the combustion of fossil fuels. Energy policies can reduce CO₂ emissions by, for example, increasing energy efficiency, reducing reliance on fossil fuels, and shifting from high-carbon fuels to lower carbon fuels. Conversely, energy policies that miss opportunities to make such changes will leave unchecked the trend of increasing CO₂ emissions. Consequently, energy policy decisions made today can help reduce GHG emissions in the near term and can significantly affect how costly it would be to implement any future climate policy.

The report identifies four key objectives that drive energy policy: (1) secure, plentiful, and diverse primary energy supply; (2) robust, reliable infrastructure for energy conversion and delivery; (3) affordable and stable energy prices; and (4) environmentally sustainable energy production and use. Furthermore, climate-friendly energy policies fall into three general categories, i.e., policies that: (1) reduce GHG emissions now; (2) promote technology advancement or infrastructure development that will reduce the costs of achieving GHG emissions reductions in the future; and (3) minimize the amount of new capital investment in assets that would be substantially devalued if a GHG program were implemented.

The report identifies the following key elements of a climate-friendly energy policy:

1. Increased natural gas production and expanded natural gas transportation infrastructure will lower price and increase the availability of natural gas and, in turn, support the continued use of gas in lieu of coal in new power plants.
2. Deployment of efficient electricity production technologies, including combined heat and power, fuel cells, and highly efficient power plant technologies, can significantly increase the amount of useful energy gleaned from fuels, and thus reduce both energy costs and GHG emissions.
3. Maintaining a role for nuclear and hydroelectric power can enhance diversity of energy supply. It also will reduce growth in fossil fuel consumption for electricity generation and may reduce energy prices.
4. Deployment of renewable energy technologies can help diversify the nation's energy portfolio. These technologies are environmentally beneficial – most produce little or no GHG emissions.
5. Enhancing end-use energy efficiency in buildings and industry can reduce overall consumer costs in many cases, can reduce the need for new electric power plants, and can reduce GHG

8. Research and development on non-fossil fuels and carbon sequestration can provide future alternatives to reliance on oil and could enable continued use of coal consistent with GHG emissions limitation.

The report concludes that the set of climate-friendly energy policies discussed advances climate objectives, but it does not constitute a fully elaborated climate policy. It does not produce the magnitude of reductions needed to meet the non-binding goal set forth for the United States in the 1992 Rio Framework Convention on Climate Change, i.e., to return U.S. GHG emissions to 1990 levels.

For further information, contact the Pew Center on Global Climate Change, 2101 Wilson Boulevard, Suite 550, Arlington, VA 22201, (telephone: (703) 516-4146) or refer to the Center's Internet Web Site: <http://www.pewclimate.org>.

C. Passenger Ferries, Air Quality, and Greenhouse Gases (CALSTART)

CALSTART has issued a research report titled *Passenger Ferries, Air Quality, and Greenhouse Gases: Can System Expansion Result in Fewer Emissions in the San Francisco Bay Area?*. CALSTART is a virtual R&D organization, dedicated to creating and expanding a global advanced transportation technologies industry and related markets. Through technology development, analysis, and implementation, its goals are to clean the air, create high-quality jobs, and develop energy efficient transportation. The study was co-sponsored by the Gas Technology Institute, the U.S. Department of Energy, and the U.S. Department of Transportation (Center for Climate Change and Environmental Forecasting).

The report states that continued interest in improving air quality in the United States, along with renewed interest in the expansion of urban passenger ferry service, has created concern about air pollution from these vessels. This study shows that emissions from ferries are significant. However, it also shows that there are no serious technical impediments to the development of passenger ferries with much lower emissions than those currently in service, so that ferry commuting can become an environmentally sound choice. Achieving this outcome will require research and development of new technologies, followed by their widespread use. This study first analyzes air pollution (NO_x, HC, PM, CO, SO₂, and CO₂) emissions from three passenger ferries in the San Francisco Bay Area with existing engines. It then applies a number of new engine and emissions control technologies to the same level of service in order to evaluate the potential of these new technologies.

2. Technologies that can reduce emissions from Tier 2 levels by 85-98% are needed to make the air pollution impacts of ferry commutes lower than those from on-land commutes (assuming no net induced travel demand). This result makes sense in light of the fact that on-road transportation modes (especially the automobile) have become extremely clean in the last decade, with emissions reduction levels (relative to direct engine exhaust) of 98% or more. However, it also depends on many context-dependent factors such as landside commute options.
3. It should be feasible to design and implement an enhanced ferry scenario to conform to regional mobility and air quality planning goals. Such a scenario could provide new high-occupancy mobility options, possibly at a lower subsidy per passenger than other transit options, and almost certainly at a lower cost than the total cost of new freeway lanes and structures within a congested urban commute shed. Advantages of ferry over highway building options stem from the right-of-way, environmental, and construction costs associated with lane additions in congested areas. In addition, ferry service could be implemented in a much quicker time period, thus bringing mobility, access, and socioeconomic benefits on-line much sooner.
4. The development and deployment of new technologies to accomplish these goals will require government action. Possible next steps in development of low-emission ferry technologies include: (a) the collection of more accurate data on in-situ emissions and duty cycles; and (b) demonstration projects for promising technologies. The deployment of new low-emission ferry technologies could be aided by performance-based incentive mechanisms that reward innovation and improved environmental performance.

For further information, contact Mr. Gregg Moscoe, CALSTART, 2181 East Foothill Boulevard, Pasadena, CA 91107, (telephone: (626) 744-5600, electronic mail: gmoscoe@calstart.org), or visit the CALSTART Internet Web Site at <http://www.calstart.org>.

D. Ballast Water Treatment (IMO/Globallast)

The International Maritime Organization (IMO), with funding provided by the Global Environment Facility (GEF) through the United Nations Development Program (UNDP), has initiated the Global Ballast Water Management Program (Globallast). This program is aimed at reducing the transfer of harmful marine species in ships' ballast water by assisting developing countries to: (1) implement existing IMO voluntary guidelines on ballast water management

cooperation between the many parties involved. The Ballast Water Treatment Research and Development (R&D) Directory has been developed as part of this effort.

During August 2002, Globallast published its latest version of the R&D Directory. It lists research and development projects that are focused specifically on the physical, mechanical, or chemical treatment of ballast water to prevent/reduce the transfer of aquatic organisms. It does not list broader research projects relating to ballast water or marine bio-invasion issues in general. The directory is organized into two primary divisions: projects completed and projects under way. Within each primary division, research projects are listed by country, name of project, treatment options researched, principal researchers, contact details, host institution, location of research, funding level, funding sources, timeframe, aims and objectives, research methods, and results.

Ballast water treatment/management options researched include: ballast water exchange, membrane filtration, ultraviolet irradiation, ozone, heat, biocides, oxygen deprivation, gas injection, mechanical separation, seawater electrolysis, chemicals, and cyclonic separation.

For further information, contact Mr. Steve Raaymakers, Program Coordination Unit, Global Ballast Water Management Program, International Maritime Organization, 4 Albert Embankment, London SE1 7SR, United Kingdom, (telephone: 44-(0)20-7587-3251, electronic mail: sraaymak@imo.org) or visit the Globallast Web Site at <http://globallast.imo.org>.

E. Maritime Research and Technology Development (MARAD)

During August 2002, the Maritime Administration (MARAD), U.S. Department of Transportation (DOT), sent a report to Congress titled *Maritime Research and Technology Development*. This report responds to section 3505 in the Department of Defense Authorization Act for Fiscal Year 2001 (P.L. 106-398). The report highlights that funding for maritime research and development is far less than similar funding for other modes of transportation.

The report addresses the following items:

1. The approximate dollar values appropriated by the Congress for each of the five fiscal years ending before the study was commenced for each of the following modes of transportation: highway, rail, aviation, public transit, and maritime.
2. A description of how federal funds appropriated for research in the different transportation

programs, including the potential for the creation of maritime transportation research centers and the benefits of cooperating with existing surface transportation research centers.

DOT currently leads the “MTS Initiative” which brings together key agencies that are involved with the U.S. marine transportation system (MTS). This initiative is focused on all aspects of the system and works through an Interagency Committee and a non-federal National Advisory Council and their subcommittees. Research and technology development efforts will be required to facilitate an expansion of the MTS that is safe, efficient, and secure.

The U.S. MTS consists of waterways, ports and their intermodal connections, vessels, vehicles, manufacturing and repair facilities, information systems, and system users. More than 1,000 harbor channels and 25,000 miles of inland, intracoastal, and coastal waterways in the United States support the over 300 ports and 3,700 terminals that handle passenger and cargo movements. The waterways and ports are connected to 152,000 miles of rail, 460,000 miles of pipelines, and 45,000 miles of interstate highways. The MTS also contains shipyards, repair facilities, suppliers, and designers that are crucial to maritime activity along with a talented, trained labor force critical to maintaining the vitality and safety of the system.

For further information, contact Ms. Robyn Boerstling, Director, Office of Congressional and Public Affairs (MAR-240), Maritime Administration, U.S. Department of Transportation, 400 Seventh Street, SW, Washington, DC 20590, (telephone: (202) 366-1707, electronic mail: robyn.boerstling@marad.dot.gov) or visit the MARAD Web Site: <http://www.marad.dot.gov>.

F. U.S. Greenhouse Gas Emissions and Sinks (EPA)

During August 2002, the U. S. Environmental Protection Agency (EPA) released its report (430-R-02-003) titled *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2000*. The estimates of emissions and removals contained in this report, along with future updates, will be used to monitor and track the progress of the United States in meeting its commitments under the United Nations Framework Convention on Climate Change (UNFCCC). In accordance with a decision of the Conference of Parties to the UNFCCC, this inventory complies with the UNFCCC Reporting Guidelines on Annual Inventories. Adherence to these guidelines ensures that national inventories are well-documented, consistently prepared, and as accurate and complete as possible.

In June 1992, the United States signed, and subsequently ratified in October 1992, the UNFCCC. The objective of the UNFCCC is to achieve stabilization of greenhouse gas concentrations in the

Naturally occurring greenhouse gases include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and ozone (O₃). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also greenhouse gases, but they are, for the most part, solely a product of industrial activities. Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are halocarbons that contain chlorine, while halocarbons that contain bromine are referred to as bromofluorocarbons (i.e., halons). Because CFCs, HCFCs, and halons are stratospheric ozone depleting substances, they are covered under the Montreal Protocol. The UNFCCC defers to this earlier international treaty; consequently these gases are not included in national greenhouse gas inventories. Some other fluorine containing halogenated substances – hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) – do not deplete stratospheric ozone but are potent greenhouse gases. These latter substances are addressed by the UNFCCC and are accounted for in national greenhouse gas inventories.

Although the direct greenhouse gases CO₂, CH₄, and N₂O occur naturally in the atmosphere, their atmospheric concentrations have been affected by human activities. Since pre-industrial time (i.e., about 1750), concentrations of these greenhouse gases have increased by 31, 150, and 16 percent, respectively.

The report finds that, in the year 2000, total U.S. greenhouse gas emissions rose to 7,001.2 teragrams of carbon dioxide equivalents (Tg CO₂ Eq.), i.e., 14.2 percent above 1990 emissions. The single year increase in emissions from 1999 to 2000 was 2.5 percent (171.7 Tg CO₂ Eq), which was greater than the average annual rate of increase for 1990 through 2000 (1.3 percent). The higher than average increase in emissions in 2000 was, in part, attributable to the following factors: (1) robust economic growth in 2000, leading to increased demand for electricity and transportation fuels; (2) cooler winter conditions compared to the previous two years; and (3) decreased output from hydroelectric dams.

For further information, contact Mr. Michael Gillenwater, Greenhouse Gas Inventory Program, Office of Atmospheric Programs, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, (telephone: (202) 564-4092, electronic mail: ghginventory@epa.gov). A copy of this report and previous reports can be viewed on the following EPA Internet Web Site: <http://www.epa.gov/globalwarming/publications/emissions>.

G. Port Security (GAO)

During August 2002, the U.S. General Accounting Office (GAO) published a report (GAO-02-

of material being transported through ports, and the ready transportation links to many locations within U.S. borders. The nation faces a difficult task in providing effective security across the nation's port system, and while progress is being made, an effective port security environment may be many years away. Although some ports have developed in such a way that security can be tightened relatively easily, many ports are extensive in size and have dispersed enterprises intertwined with such security concerns as public roadways and bridges, large petrochemical storage facilities, unguarded access points, and a need for ready access on the part of thousands of workers and customers. While broad popular support exists for greater safety, this task is a difficult one because the nation relies heavily on a free and expeditious flow of goods. To the extent that better security impinges on this economic vitality, it represents a real cost to the system.

Since September 11, 2002, federal agencies, state and local authorities, and private sector stakeholders have done much to address vulnerabilities in the security of the nation's ports. The Coast Guard, in particular, has acted as a focal point for assessing and addressing security concerns, anticipating many of the requirements that the Congress and the Administration either are contemplating or have already put in place. Two other key federal agencies – the Customs Service and the Immigration and Naturalization Service (INS) – also have actions under way to begin to address such issues as container security and screening of persons seeking entry into the United States. At the state level, Florida has enacted a set of security standards in advance of September 11, 2002, and has taken a number of actions to implement these standards at its ports. At other ports across the nation, actions have varied considerably, particularly among private sector stakeholders.

While the proposal to consolidate federal agencies responsible for border security may offer some long-term benefits, three challenges are central to successful implementation of security enhancing initiatives at the nation's ports – standards, funding, and collaboration. The first challenge involves implementing a set of standards that defines what safeguards a port should have in place. Under the Coast Guard's direction, a set of standards is being developed for all U.S. ports to use in conducting port vulnerability assessments. However, many questions remain about whether the thousands of people who have grown accustomed to working in certain ways at the nation's ports will agree to, and implement, the kinds of changes that a substantially changed environment will require. The second challenge involves determining the amounts needed and sources of funding for the kinds of security improvements that are likely to be required to meet the standards. Florida's experience indicates that security measures are likely to be more expensive than many anticipate, and determining how to pay these costs and how the federal government should participate will present a challenge. The third challenge is ensuring that there is sufficient cooperation and coordination among the many stakeholders to make the

H. Marine Transportation Federal Financing (GAO)

The U.S. General Accounting Office (GAO) has published a report (GAO-02-1033) dated September 2002 and titled *Marine Transportation: Federal Financing and a Framework for Infrastructure Investments*. As the world's leading trading nation, the United States depends on a vast marine transportation system (MTS). Ninety-five percent of U.S. overseas trade tonnage moves by water, and the cargo moving through the U.S. marine transportation system contributes hundreds of billions of dollars to the U.S. gross domestic product. The MTS includes coastal ports and shipping channels; 25,000 miles of navigable inland and coastal channels and waterways; and ports on the Great Lakes and elsewhere. Critical MTS issues include modernizing aging locks and dams on inland waterways, dredging waterways to new depths to accommodate larger ships, and upgrading navigation systems for maximum safety and efficiency. Additionally, new and far-reaching security challenges have emerged for the system.

As it does with the nation's highway and aviation systems, the federal government participates with hundreds of public and private entities in maintaining and improving the MTS. Federal funding has been directed primarily at waterside projects such as maintaining channels, aiding navigation, and monitoring the entry of ships into the nation's ports. Landside projects, such as terminals, berths, piers, and systems for transferring goods from ships to trains and trucks, have been funded mainly by state and local entities.

This report analyzes federal funding for the commercial MTS and compares it with federal funding for the aviation and highway systems. During fiscal years 1999, 2000, and 2001, federal expenditures for the commercial MTS averaged \$3.9 billion per year. Funding for about 80 percent of these expenditures came from the U.S. Treasury's general fund. During this same period, federal agencies collected about \$1 billion each year from MTS users. Most of these collections were credited to trust fund accounts that, by law, are dedicated to maritime-related activities such as improving inland waterways or supporting harbor maintenance. In addition, customs duties levied on commodities imported through the MTS averaged about \$15.2 billion each year, most of which were deposited in the U.S. Treasury's general fund.

During the same 3-year period, federal expenditures for aviation and highway transportation systems averaged \$10 billion and \$25 billion, respectively, each year. Unlike the funding approach for the MTS, which relies extensively on general tax revenue, the federal funding approach for aviation and highway relies almost exclusively on assessments on users of the transportation systems. During this period, federal agencies collected an average of \$11 billion each year from users of the aviation transportation system and an average of \$34 billion each year from users of the highway transportation system. As with the MTS, most of these

stratum of national activities, GAO found that key components of a framework for evaluating federal investments include: (1) setting clear and measurable national goals for the MTS, including its relationship to other transportation modes; (2) defining what the federal role should be relative to other stakeholders; (3) determining which funding approaches and related tools will maximize the federal return; and (4) ensuring that a process is in place for evaluating performance periodically so that goals, roles, and approaches can be reexamined and modified as necessary.

For further information, contact JayEtta Z. Hecker, Director, Physical Infrastructure Issues, U.S. General Accounting Office, 441 G Street, NW, Washington, DC 20548, (telephone: (202) 512-2834), or refer to the GAO's Internet Web Site: <http://www.gao.gov>.